





Sony Digital Recorder and Player **HDW-2000 Series**

HDCAM Studio VTRs with 24P-Recording/Playback Ca



pabilities – A Versatile Workhorse for HD Programming



Since introducing its first model in 1997, Sony has enhanced the HDCAMTM Series of products, continually reinforcing its support to the emerging DTV agendas around the world. Followed by the introduction of the HDW-F900 multi-frame rate camcorder and its companion HDW-F500 VTR, HDCAM products have revolutionized the world of movie-making, now popularly recognized by the name CineAltaTM.

With the rapid proliferation of HD in video productions, Sony introduced its second generation of HDCAM products, the HDW-2000 Series VTR and its counterpart HDW-750 camcorder. These models continue to present a cost-effective and feature-enhanced HD solution, focused on streamlining the migration process to full DTV operations.

In response to the ever-increasing demands for 24P-based HD program origination in various video production applications — especially movie-making — the HDW-2000 Series has been further evolved by accommodating the ability to record at the frame rates of 23.98PsF and 24PsF, serving as a cost-effective entrance to CineAlta operations. Furthermore, the capability to output the converted 720P signals has also been added for more flexible operation. The HDW-2000 Series also includes other invaluable functions such as legacy playback of standard-definition BETACAMTM formats and internal up-/down-conversion* capabilities. This highly versatile playback capability is crucial for bi-directional exchange of program material between co-existing SDTV and HDTV infrastructures, and for integration into a wide array of editing environments.

Sony has been continually improving its lineup of the HDW-2000 Series to allow users to select the most appropriate HDCAM VTR for their specific operational or budgetary needs. Four types of recorder and one type of player are available in a wide, yet affordable price range, each offering a different combination of Betacam format playback capabilities. All of these products can operate in multiple modes including 59.94i, 50i, 29.97PsF, 25PsF, 24PsF, and 23.98PsF.

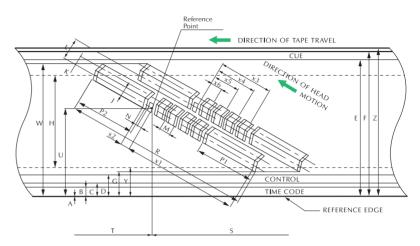
With a rich choice of models, and the high quality and operability that the HDCAM format is renowned for, the HDW-2000 Series VTR offers an economically well-balanced solution for HD programming.

^{*} Down-conversion is not available for tapes played back at 23.98 and 24 frames.

Features

High-Definition Picture Quality with HDCAM Format

The HDW-2000 Series recorders/player adopt the proven HDCAM format, recording high-definition component digital signals using the state-of-the-art HDCAM compression technology. This excellent compression scheme maintains a high video bit rate of 140 Mb/s (data rate on tape of 185 Mb/s). The format combines superb picture quality with the high reliability and robustness of 1/2-inch tape integrated into a design approach inherited from the BETACAM Series.

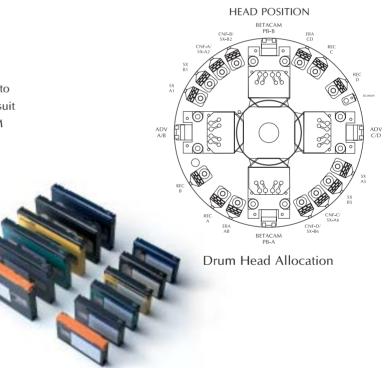


Compact, Affordable High-Definition Video Cassette Recorder/Player with Legacy Playback

The HDW-2000 Series high-definition VTRs are not only affordable, they also provide a smooth migration path into the HDTV world. Five different models are available to suit budgetary and operational needs. In addition to HDCAM recording/playback, the HDW-2000 Series VTRs are equipped with backward playback capability for current 1/2-inch tape formats*; Digital BETACAM, MPEG IMX, BETACAM SX, BETACAM SP and BETACAM. However, the HDW-2000 eliminates this capability in order to provide utmost cost efficiency. With its affordability and different choice of feature sets, the HDW-2000 Series is destined to be a true workhorse in broadcast stations and

* Playback-compatible formats vary by product.

ENG applications.



HDW-2000 Series Line-up

		Recording Format	Playback Format
HDW-2000	HD Digital Video Cassette Recorder	HD Digital Video Cassette Recorder HDCAM	
HDW-M2000	HD Digital Video Cassette Recorder	HDCAM	HDCAM, Digital BETACAM, MPEG IMX, BETACAM SX,
HDW-M2000P	HD Digital video Cassette Recorder	ПРСУМ	BETACAM SP, BETACAM
HDW-D2000	HD Digital Video Cassette Recorder	order HDCAM HDCAM, Digital BETACAM, MPEG IMX	
HDW-S2000	HD Digital Video Cassette Recorder	sette Recorder HDCAM HDCAM, BETACAM SX, BETACAM SP, BETACAM	
HDW-S2000P	HD Digital video Cassette Recorder		
HDW-M2100	HD Digital Video Cassette Player		HDCAM, Digital BETACAM, MPEG IMX, BETACAM SX,
HDW-M2100P HD Digital video Cassette Player ————————————————————————————————————		BETACAM SP, BETACAM	

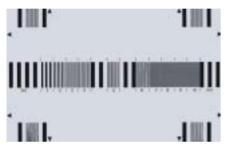
Built-in Up- and Down-Converters*

The HDW-2000 Series can playback a wide variety of legacy SDTV VTR formats in addition to the HDCAM format. Since the HDW-2000 Series can output signals in 1080i, 576i and 480i, each format is reproduced in its corresponding vertical resolution.

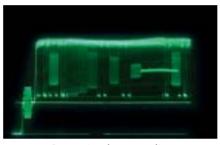
As an even greater advantage, the HDW-2000 Series has up and down converters built-in so a program originated for SDTV can be up converted for HDTV transmission, and

materials that were made in the HD format can be down converted as "Super-sampled" SD images. This is a distinct advantage of the HDW-2000 Series. The "Super-sampled" HD origination produces standard definition 480 and 576-line NTSC/PAL signals which are superior to those originated in standard definition (their horizontal and vertical MTFs are higher and the associated scanning aliasing is less).

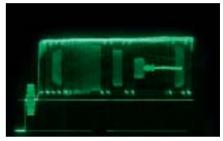
* Excludes the HDW-2000.



Multi-burst Chart



Conventional 480/576-line Digital VTR



"Super-sampled" HDCAM Down-Converted signals

Interlace, Progressive Switchable Operation including 24PsF Mode

The HDW-2000 Series recorders provide recording and playback capability of the HDCAM format in 1080/59.94i, 1080/50i, 1080/29.97PsF, and 1080/25PsF frame rates*1. The HDW-2000 Series also allows legacy playback of both 480/59.94i and 576/50i on the same deck*1. This flexibility makes it an extremely effective tool for international programming.

To meet the increasing needs of 24P program creation, 23.98PsF/24PsF recording is now available on all HDW-2000 Series recorders, as well as the ability to convert 23.98PsF/24PsF recordings to a 25PsF signal with the appropriate time-code conversion for 24P program creation*². Furthermore, the full HDW-2000 Series lineup can output the converted 720/59.94P signal from the 59.94i or 29.97PsF playback, providing further enhanced flexibility.*²

- *1 The frame rate of the source tape cannot be converted at the output between 1080/59.94i and 1080/50i or between 480/59.94i and 576/50i. Playback of a 576-line analog Betacam tape on the HDW-M2000/S2000/M2100 (NTSC model), and playback of a 480-line analog BETACAM tape on the HDW-M2000P/S2000P/M2100P (PAL model) is for monitoring purpose only.
- *2 Requires audio pitch correction. Down conversion and/or "pull-down" of tapes played back at 23.98PsF or 24PsF frame rates are not provided.

Long Recording Time on a Single Cassette

Utilizing the HDCAM format's high-density recording capability and compression technology, the HDW-2000 Series provides a long maximum recording time of 124 minutes at 1080/59.94i, 149 minutes at 1080/50i, and 155 minutes at 1080/24PsF for each L cassette. Small size cassettes can also be used, which provides a maximum of 40 minutes of recording at 1080/59.94i, 48 minutes at 1080/50i, and 50 minutes at 1080/24PsF. This flexibility allows the HDW-2000 Series to cover a wide range of applications including news, sports, and production.

Digital Audio and Dolby®* Recording

The HDCAM format records four channels (two AES/EBU stereo pairs) of non-compressed digital audio (20 bit at 48 kHz). The HDW-2000 Series recorders can also record non-audio data streams within the audio recording area by packaging the data within an AES/EBU wrapper.

Furthermore, the HDW-2000 recorders can record Dolby-E and Dolby AC-3 data (non-audio) streams on the audio tracks.

* Dolby and the double-D symbol are trademarks of Dolby Laboratories Inc.

Compact Design and Low Power Consumption

This Series features a compact 4RU-size* design and weighs only 23 kg (50 lb 11 oz) - 12 kg (26 lb 7 oz) lighter than the HDW-500 HD Video Recorder. It also has low power consumption of 220 W. This compactness and low power consumption are suited to not only studio use but also installation into OB-vans.

*4RU size=427 x 174 x 540 mm (16 7/8 x 6 7/8 x 21 1/2 inches)

Versatile Interfaces

The HDW-2000 Series features a wide range of interfaces including:

- HD SDI I/O*
- Analog Composite output
- SDI output (D1 component)
- (NTSC/PAL)

- SDTI I/O*

- Digital Audio I/O*(AES/EBU)
- (optional-requires HKDW-102 Analog Audio I/O* SDTI Interface Board)
 - Audio Monitor output
- Analog Component output
- (2-ch analog)
- *The HDW-M2100/M2100P player provides outputs only.



HDW-M2000

User-friendly Control Panel

Control panels are compact, yet comprehensive. There is a minimal learning curve since its design and functionality are inherited from universally used BETACAM SP VTRs. In addition, the control panel has a multi-function display that provides comprehensive information for quick access and easy control of a variety of functions. Dedicated control knobs and meter displays are included for each of the four audio channels.

Using the optional control panel HKDW-101, VTRs can be controlled from the same control panel simultaneously.



HKDW-101 Control Panel with BKMW-102 Case

Easy Maintenance

Most of the circuitry of the HDW-2000 Series is arranged on plug-in boards to allow quick and easy maintenance. The drum assembly has been designed to achieve simple, low-cost maintenance by adopting an upper drum mechanism and an auto adjustment function as used in MPEG IMX VTRs and BETACAM SX recorders. This helps to drastically reduce the time required for periodic drum replacement.





Operational Convenience

Frame Accurate Editing

The HDW-2000 Series recorders enable insert or assemble editing with frame accuracy. Each channel of video and audio signal is independently editable. It is possible to execute precise editing on HDCAM tapes in machine-to-machine or A/B roll configurations.

High Speed Color Picture Search

Recognizable color pictures are provided in shuttle mode at speeds up to ± 50 times normal playback.

Dynamic Tracking™ Playback

A Dynamic Tracking playback capability provides high quality pictures over the range of -1 to +2 times normal playback speed during playback of HDCAM tapes, -1 to +3 times for BETACAM/BETACAM SP/MPEG IMX/Digital BETACAM tapes, -1 to +2 for BETACAM SX tapes.

Digital Jog Sound

Reproduction of four (eight for MPEG IMX) channels of digital audio is achieved, in the Jog mode. With a responsiveness and sound quality reminiscent of BETACAM SP machines, this feature is helpful in quickly and precisely establishing an editing point while monitoring the digital audio signals which remain in absolute sync with the pictures.

Audio Crossfade Function

As with all Sony half-inch professional formats, the HDW-2000 Series recorders feature Digital Audio Crossfade to achieve smooth audio transitions at audio insert edit points. Previously recorded audio signals are read in advance using Pre-read heads and then re-recorded onto the same track after being mixed with the input audio signal. The crossfade duration can be selected from a range of values.

Dynamic Motion Control (DMC) Playback

The HDW-2000 Series also provides a DMC playback capability, memorizing the tape speed trajectory over the DT speed range (-1 to +2 times normal speed).

Pre-read Editing

The HDW-2000 Series recorders are equipped with advanced playback heads to enable pre-read editing. This function allows application including titling with a single VTR, A/B-roll with two VTRs, as well as audio mix and channel swap.

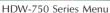
1080/1035 Line Conversion

The HDW-2000 Series provides bi-directional vertical filtering between the two active line standards of 1080 and 1035 and enhanced quality of variable speed Dynamic Tracking playback as standard.

Shot Marks

The HDW-2000 Series recorders can scan tapes with Shot Marks and automatically detect their positions. After scanning, a list of all the marks is displayed on the video monitor, allowing easy cueing to any mark.





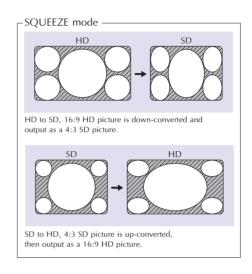


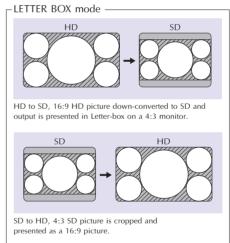
HDW-2000 Series Time Code List

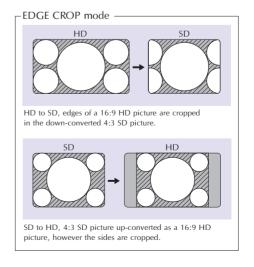


Selectable Picture Mode

Three modes of operation enable correct presentation, depending on the application required.







Metadata Handling

In the HDW-2000 Series, special care has been given to metadata handling in order to increase production efficiency, and to provide the utmost convenience in media asset management systems and material distribution systems. In general, metadata consists of user-defined data indicating when, where, or by whom the material was created, Closed Caption data, and a variety of other data describing the material content.

Among such metadata, UMID, as standardized in SMPTE 330M, is a globally unique identifier used for the identification of picture/audio material and data. UMID is automatically

generated within compatible equipment such as VTRs and camcorders during each recording.

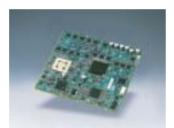
The HDW-2000 Series VTR provides the facility to record UMID on tape when the VTR performs dubbing, editing, and copying through up-/down-conversion. This recorded UMID is used in subsequent processes from editing, archiving and on to distribution, bringing efficiency throughout the entire program production chain.

The HDW-2000 Series VTRs enables up to 255 bytes x 3 packets of metadata per field to be recorded, which can be transferred to other devices via HD-SDI, or SDTI.

Optional Accessories



HKDW-101, Control Panel



HKDW-102, SDTI Interface Board



BKMW-102, Remote Control Unit



BKMW-103, Control Panel Extension Kit



RMM-131, Rack Mount Kit



RCC-5G, 9-pin Remote Cable



RM-280, Editing Controller



HKDV-900, HD Digital Video Controller*



BCT-124HDL/64HDL/22HD, HDCAM Tape Cassette



BCT-HD12CL, Cleaning Cassette



BKNW-7000 Series MMStation™ Remote Monitoring and Maintenance Software

MLB-1M-100 Memory Label (for Tele-File system)

*To connect the HKDV-900 with the HDW-2000 Series VTRs, the optional video controller cable, RCC-1505H/1510H/1530H is required.

HDW-2000 Series Specifications

General			HDW-2000	HDW-M2000/M2000P	HDW-M2100/M2100P		
	Power requirem		·	100 to 240 V, 50/60 Hz			
	Power consump			220 W			
	Operating temporal Storage tempera			+5 to +40 °C (41to 104 °F) -20 to +60 °C (-4 to +140 °F)			
	Humidity	iii.c		25 to 90%			
	Mass			23 kg (50 lb 11 oz)			
	Dimensions (W			174 x 544 mm (16 7/8 x 6 7/8 x 21 1/2 inc			
	Tape speed	HDCAM		9.97PsF), 80.6 mm/s (50i, 25PsF), 77.4 mm/			
		Digital BETACAM MPEG IMX		96.7 64.5 mm/s (525/59.9	mm/s 4) 53.8 mm (625/50)		
		BETACAM SX			mm/s		
		BETACAM/BETACAM SP	_		4), 101.5 mm/s (625/50)		
	HDCAM record	/playback time		ites (59.94i, 29.97PsF, with BCT-124HDL ca			
				ninutes (50i, 25PsF, with BCT-124HDL casse			
				utes (24PsF, 23.98PsF, with BCT-124HDL ca			
				utes (59.94i, 29.97PsF, with BCT-40HD case ninutes (50i, 25PsF, with BCT-40HD cassett			
				utes (24PsF, 23.98PsF, with BCT-40HD casset			
	Fast forward/rev	vind time		prox. 3 minutes (with BCT-124HDL cassette			
	Search speed	Shuttle mode					
	range	HDCAM		ack (59.94i, 29.97PsF), Still to ±58 times no			
		D: :: I DETICAL	Still to ±	60 times normal speed playback (24PsF, 23.			
		Digital BETACAM MPEG IMX			rmal speed playback rmal speed playback		
		BETACAM SX			ormal speed playback		
		BETACAM/BETACAM SP		Still to ±35 times normal s			
			_	Still to ±42 times normal			
		Variable mode	•				
		HDCAM		-1 to +2 times normal speed playback			
		Digital BETACAM	_		mal speed playback		
		MPEG IMX BETACAM SX		-1 to +3 times norr			
		BETACAM SX BETACAM/BETACAM SP		-1 to +2 times norr -1 to +3 times norr	mal speed playback mal speed playback		
		Jog mode	I	Still to ±1 times normal speed playback	на эреси ріауваск		
	Servo lock time		0.6 s or less (59.94i, 29.97PsF, fro	m standby on), 0.7 s or less (50i, 25PsF, 24	PsF, 23.98PsF, from standby on)		
	Load/unload tim			6 s or less (both L and S cassettes)	,		
put/output	HD-SDI input	Lugay	BNC x 1 (SMPTE 292M), Ser		_		
		onal HKDW-102 installed)	BNC x 1 (SMPTE305	iM), 270 Mb/s Tri-level sync, 0.6 Vp-p, 75 Ω, sync negative	e or Black Burst or Composite		
	Reference video	mput	bive x 2 (with a loop-tilfough),	0.3 Vp-p, 75 Ω, sync negative	or brack burst or composite,		
	Digital audio inpu	ut (CH 1/2, CH 3/4)	BNC x 2, AE		_		
	Analog audio in		XLR-3-pin type, f				
	(CH 1/2/3/4/Cu	e)	Low off: -60 dBu, high in		_		
			High off: +4 dBu, high in				
			High on: -4 dBm, 600 Ω to				
	Time code inpu HD-SDI output	t	XLR-3-pin type, female, x 1 (0.5 to 18 Vp-p,10 kΩ, balanced) BNC x 3 (SMPTE 292M including one character out), Serial Digital (1.485 Gb/s)				
		ional HKDW-102 installed)	DINC X 3 (SMPTE 2)	BNC x 2 (SMPTE 305M), 270 Mb/s	51141 (1.703 CD/S)		
	SDI output		BNC x 3 (SMPTE 2	259M including one character out), Serial Di	igital (270 Mb/s)		
	Analog composi	ite output	BNC x 3 (R	S-170A, including one character out, one V	VFM out)		
				Vp-p, sync negative, R-Y/B-Y: 0.7 Vp-p, 7			
	Analog compon		BNC	C x 3, for 1 set, 1.0 Vp-p, 75 Ω, sync negative	ve		
	Digital audio outp	Jul		BNC x 4, AES/EBU (CH 1/2, CH 3/4, CH 5/6, CH 7/8)			
	Analog audio o	utput (CH 1/2/3/4)	XLR-3-pin type. >	5, male, +4 dBm (600 Ω load), low impeda	ance, balanced		
	Time code outp			ype, male, x 1 (2.2 Vp-p, low impedance, b			
	Monitor output	L/R	XLR-3-pin type, m	ale, x 2 (+4 dBm at 600 Ω load, low imped	ance, balanced)		
	Headphones			phone jack (-∞ to -12 dBu at 8 Ω load, un	balanced)		
	Remote1 In Remote1 Out			D-sub 9-pin, Sony 9-pin remote interface D-sub 9-pin, Sony 9-pin remote interface			
	Remote1 Out RS-232C		D-sub 9-pin and 9-pin emote merace				
	RS-232C Remote2 Parallel I/O			D-sub 50-pin			
		211/0					
		er I/O		D-sub 9-pin, D-sub 15-pin			
	Remote2 Paralle	er I/O		D-sub 15-pin			
	Remote2 Paralle Video control Control panel Others	er I/O		D-sub 15-pin "Memory Stick" TM slot, PCMCIA slot			
ocessor adjustment range	Remote2 Paralle Video control Control panel Others Video level	er I/O		D-sub 15-pin "Memory Stick" [™] slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable			
ocessor adjustment range	Remote2 Paralle Video control Control panel Others Video level Chroma level			D-sub 15-pin "Memory Stick" Month Slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable			
ocessor adjustment range	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev	el		D-sub 15-pin "Memory Stick* [™] M slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 lRE			
ocessor adjustment range	Remote2 Paralle Video control Control panel Others Video level Chroma level	rel		D-sub 15-pin "Memory Stick" Month Slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable			
ocessor adjustment range	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync pha System SC phas	rel nue		D-sub 15-pin "Memory Stick*" \mathbb{N} slot, PCMCIA slot $\pm 3 \text{ dB/}\infty$ to $\pm 3 \text{ dB}$, selectable $\pm 3 \text{ dB/}\infty$ to $\pm 3 \text{ dB}$, selectable $\pm 3 \text{ IRE}$ $\pm 30^{\circ}$ $\pm 15 \mu\text{s}$ $\pm 200 \text{ ns}$			
, ,	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync pha System Sc phas Y/C delay	rel uue ase e	-	D-sub 15-pin "Memory Stick* [™] slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 lRE ±30" ±15 μs ±200 ns ±10	0 ns		
, ,	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync pha System SC phas Y/C delay Sampling freque	rel uue ase e		D-sub 15-pin "Memory Stick" M slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 nRE ±30° ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz	0 ns		
, ,	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System SC phas Y/C delay Sampling freque Quantization	rel uue ase e		D-sub 15-pin "Memory Stick*"™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 lRE ±30° ±15 µs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample)	0 ns		
, ,	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync pha System SC phas Y/C delay Sampling freque	rel luue asse e		D-sub 15-pin "Memory Stick" M slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 nRE ±30° ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz	0 ns		
gital video performance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/F System Sync ph. System SC phas Y/C delay Sampling freque Quantization Compression	rel uue asse e	1	D-sub 15-pin "Memory Stick" TM slot, PCMCIA slot ±3 dB/\infty to +3 dB, selectable ±3 dB/\infty to +3 dB, selectable ±3 dB/\infty to +3 dB, selectable ±3 IRE ±30" ±15 \(\mu_8\) ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code			
gital video performance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync ph. System SC phas Y/C delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth	rel uue asse e	1	D-sub 15-pin "Memory Stick*™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 lRE ±30" ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz -			
gital video performance	Remote2 Paralle Video control Video level Control panel Others Video level Chroma level Set up/black lev Chroma phase/F System sync ph. System SC phas Y/C delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio	rel uue aase e e ency	1	D-sub 15-pin "Memory Stick*"™ slot, PCMCIA slot ±3 dB/∞ to 43 dB, selectable ±3 dB/∞ to 43 dB, selectable ±3 dB/∞ to 3 dB, selectable ±3 IRE ±30° ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 56 dB or more			
gital video performance alog component output rformance	Remote2 Paralle Video control Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/F System SC phas Y/C delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul	rel uue aase e e ency	Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick"™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 iRE ±30" ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 56 dB or more 1% or less	+0.5 dB/-2.0 dB		
gital video performance alog component output rformance alog composite output	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync ph. System SC phas Y/C delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth	rel uue aase e e ency	Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick*"™ slot, PCMCIA slot ±3 dB/∞ to 43 dB, selectable ±3 dB/∞ to 43 dB, selectable ±3 dB/∞ to 3 dB, selectable ±3 IRE ±30° ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 56 dB or more	+0.5 dB/-2.0 dB		
gital video performance alog component output rformance alog composite output	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/F System SC phas Y/C delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth S/N ratio Differential gain	rel hue hase e e hency hase lise)	Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick"™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 IRE ±30" ±15 µs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 53 dB or more 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 53 dB or more	+0.5 dB/-2.0 dB		
gital video performance alog component output rformance alog composite output	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync phase/f Sync phase/f Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth S/N ratio Differential gain Differential gain	rel hue hase e e hency hase lise)	Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick*™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 lRE ±30" ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 56 dB or more 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 53 dB or more 2% or less 2% or less	+0.5 dB/-2.0 dB		
gital video performance alog component output rformance alog composite output	Remote2 Paralle Video control Video level Control panel Others Video level Chroma level Set up/black lev Chroma phase/F System sync ph. System SC phas Y/C delay Sampling freque Quantization Compression Compression Channel coding Error correction Bandwidth S/N ratio K Factor (ZT Pul Bandwidth S/N ratio Differential gain Differential phas Y/C delay	rel uue aase e e e e e e e e e e e e e e e e e	Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick"™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 IRE ±30" ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - \$3 dB or more 2% or less 2% or less 20 ns or less	+0.5 dB/-2.0 dB		
gital video performance alog component output rformance alog composite output	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f- System sync ph. System SC phas Y/C delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth S/N ratio Differential gain Differential phas Y/C delay K Factor (2T Pul	rel hue hue hase he hency hase hency his he	Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick" M slot, PCMCIA slot ±3 dB/\infty to +3 dB, selectable ±3 dB/\infty to +3 dB, selectable ±3 lRE ±30" ±15 \(\mu_B\) ±15 \(\mu_B\) ±200 ns 110 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 13 dB or more 1% or less 40.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 53 dB or more 2% or less 2% or less 2% or less 2% or less 1% or less 1% or less	+0.5 dB/-2.0 dB		
gital video performance alog component output rformance alog composite output rformance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync ph. System Sync ph. System SYC delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth S/N ratio Differential gain Differential gain Differential phas Y/C delay K Factor (2T Pul K Factor (2T Pul Coutput SCH ph.	rel uue sase e e e e e e e e e e e e e e e e e	Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick*™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 lRE ±30" ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 56 dB or more 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 53 dB or more 2% or less 2% or less 2% or less 2% or less 1% or less Based upon RS-170A/CCIR R.624-3	+0.5 dB/-2.0 dB		
gital video performance alog component output rformance alog composite output rformance	Remote2 Paralle Video control Video level Control panel Others Video level Chroma level Set up/black lev Chroma phase/F System sync ph. System SC phas Y/C delay Sampling freque Quantization Compression Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth Differential gain Differential phas Y/C delay K Factor (2T Pul Sampling freque K Factor (2T Pul Soutput SCH) Sampling freque Sampling freque	rel uue sase e e e e e e e e e e e e e e e e e	Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick"™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 iRE ±30" ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 56 dB or more 1% or less ±0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 53 dB or more 2% or less 2% or less 2% or less 20 ns or less 19 or less 19 or less Based upon RS-170Λ/CCIR R.624-3 48 kHz (Syncronized with video)	+0.5 dB/-2.0 dB		
gital video performance alog component output rformance alog composite output rformance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync ph. System Sync ph. System SYC delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth S/N ratio Differential gain Differential gain Differential phas Y/C delay K Factor (2T Pul K Factor (2T Pul Coutput SCH ph.	rel uue sase e e e e e e e e e e e e e e e e e	Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick*™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 lRE ±30" ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 56 dB or more 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 53 dB or more 2% or less 2% or less 2% or less 2% or less 1% or less Based upon RS-170A/CCIR R.624-3	+0.5 dB/-2.0 dB		
gital video performance alog component output rformance alog composite output rformance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/F System SC phas Y/C delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth S/N ratio Differential phas Y/C delay K Factor (2T Pul Output SCH ph. Sampling freque Quantization	leel luue aasee ee eency lise) lise) lise) lise) lise lise) lase asee eency lise lise) lise lise lise lise lise lise lise lise	Y: 0 to 5.75 MHz Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick"™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 iRE ±30" ±15 µs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz Obit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 56 dB or more 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 53 dB or more 2% or less 48 kHz (Syncronized with video) 20 bit/sample Below measurable level 20 dB (or 18 dB selectable)	+0.5 dB/-2.0 dB +0.5 dB/-2.0 dB		
alog component output rformance alog composite output rformance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync ph. Sampling freque Quantization Differential gain Differential phar Y/C delay K Factor (2T Pul Output SCH ph. Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF s	lse) lse) lse) see see see see se	Y: 0 to 5.75 MHz Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick" M slot, PCMCIA slot ±3 dB/\infty to +3 dB, selectable ±3 dB/\infty to +3 dB, selectable ±3 lRE ±30" ±15 \(\mu_B\) ±15 \(\mu_B\) ±200 ns 115 \(\mu_B\) ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 56 dB or more 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 53 dB or more 2% or less 2% or less 2% or less 2% or less 1% or less Based upon RS-170A/CCIR R.624-3 48 kHz (Syncronized with video) 20 bit/sample Below measurable level 20 dB (or 18 dB selectable) 8, T2=15 \(\mu_B\) (on/off selectable in recording of the recording of the properties	+0.5 dB/-2.0 dB +0.5 dB/-2.0 dB		
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gital video performance alog component output rformance alog composite output rformance gital audio performance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/F System Sync ph. System SC phas Y/C delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth S/N ratio Differential phas Y/C delay K Factor (2T Pul Output SCH ph. Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF. A/D quantizatio D/A quantizatio D/A quantizatio	lsel uue aase e e ency see see see see see see see see see se	Y: 0 to 5.75 MHz Y: 0 to 5.75 MHz	D-sub 15-pin "Memory Stick" Molot, PCMCIA slot ±3 dB/\infty to +3 dB, selectable ±3 dB/\infty to +3 dB, selectable ±3 dB/\infty to +3 dB, selectable ±3 IRE ±30" ±15 \(\mu\) ±15 \(\mu\) ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz Osefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 56 dB or more 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 53 dB or more 2% or less 2% or less 2% or less 2% or less 20 ns or less 1% or less 48 kHz (Syncronized with video) 20 bit/sample Below measurable level 20 dB (or 18 dB selectable) s, T2=15 \(\mu\) s (no/off selectable in recording in 20 bit/sample	+0.5 dB/-2.0 dB +0.5 dB/-2.0 dB		
gital video performance alog component output rformance alog composite output rformance gital audio performance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync ph. Sampling freque Bandwidth S/N ratio Differential gain Differential phar Y/C delay K Factor (2T Pul Output SCH ph. Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF : A/D quantizatio D/A quantizatio Frequency respe	leel hue asse e e e e e e e e e e e e e e e e e	Y: 0 to 5.75 MHz Y: 0 to 5.75 MHz T1=50 <u>A</u>	D-sub 15-pin "Memory Stick" M slot, PCMCIA slot ±3 dB/\infty to +3 dB, selectable ±3 dB/\infty to +3 dB, selectable ±3 lRE ±30" ±15 \(\mu_B\) ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 56 dB or more 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 53 dB or more 2% or less 2% or less 2% or less 2% or less 20 ns or less 20 ns or less 1% or less Based upon RS-170A/CCIR R.624-3 48 kHz (Syncronized with video) 20 bit/sample Below measurable level 20 dB (or 18 dB selectable) s, T2=15 \(\mu_B\) (on/off selectable in recording to 20 bit/sample 20 bit/sample 20 bit/sample	+0.5 dB/-2.0 dB +0.5 dB/-2.0 dB		
gital video performance halog component output erformance halog composite output erformance gital audio performance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync phase/f System SC phas Y/C delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth S/N ratio Differential phase Y/C delay K Factor (2T Pul Output SCH phase Sampling freque Quantization Wow & fluter Headrooms Emphasis (ON/OFF A/D quantizatio D/A quantizatio D/A quantizatio Frequency respe Dynamic range	leel hue asse e e e e e e e e e e e e e e e e e	Y: 0 to 5.75 MHz Y: 0 to 5.75 MHz T1=50 L	D-sub 15-pin "Memory Stick"™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 iRE ±30" ±15 μs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 56 dB or more 1% or less 1% or less 2% or less 2% or less 2% or less 2% or less 20 ns or less 10 ns	+0.5 dB/-2.0 dB +0.5 dB/-2.0 dB mode)		
gital video performance alog component output rformance alog composite output rformance gital audio performance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync ph. Sampling freque Bandwidth S/N ratio Differential gain Differential phar Y/C delay K Factor (2T Pul Output SCH ph. Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF : A/D quantizatio D/A quantizatio Frequency respe	leel hue asse e e e e e e e e e e e e e e e e e	Y: 0 to 5.75 MHz Y: 0 to 5.75 MHz T1=50 20 F Less thar	D-sub 15-pin "Memory Stick" M slot, PCMCIA slot ±3 dB/\infty to +3 dB, selectable ±3 dB/\infty to +3 dB, selectable ±3 lRE ±30" ±15 \(\mu_B\) ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 56 dB or more 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 53 dB or more 2% or less 2% or less 2% or less 2% or less 20 ns or less 20 ns or less 1% or less Based upon RS-170A/CCIR R.624-3 48 kHz (Syncronized with video) 20 bit/sample Below measurable level 20 dB (or 18 dB selectable) s, T2=15 \(\mu_B\) (on/off selectable in recording to 20 bit/sample 20 bit/sample 20 bit/sample	+0.5 dB/-2.0 dB +0.5 dB/-2.0 dB mode)		
gital video performance lalog component output rformance lalog composite output rformance gital audio performance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync ph. System SC phas Y/C delay Sampling freque Quantization Compression Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth S/N ratio Differential plain Y/C delay K Factor (2T Pul Sampling freque Quantization Output SCH ph. Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF A/D quantizatio D/A quantizatio Crosstalk Sampling freque Distortion	rel uue asse e e e e e e e e e e e e e e e e e	Y: 0 to 5.75 MHz Y: 0 to 5.75 MHz T1=50 \(\textit{L} \)	D-sub 15-pin "Memory Stick"™ slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 iRE ±30" ±15 µs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 56 dB or more 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 53 dB or more 2% or less 2% or less 2% or less 20 ns or less 19 or less 10 ns or less 19 or less 48 kHz (Syncronized with video) 20 bit/sample Below measurable level 20 dB (or 18 dB selectable in recording to the selectable in the se	+0.5 dB/-2.0 dB +0.5 dB/-2.0 dB mode)		
gital video performance alog component output reformance composite output reformance gital audio performance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync ph. System SC phas Y/C delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth S/N ratio Differential gain Differential gain Differential phas Y/C delay K Factor (2T Pul Output SCH ph. Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF : A/D quantizatio Frequency respe Dynamic range Distortion Crosstalk Sampling freque S/N ratio	rel uue asse e e e e e e e e e e e e e e e e e	Y: 0 to 5.75 MHz Y: 0 to 5.75 MHz T1=50 µ 20 H 1 Less that	D-sub 15-pin "Memory Stick" Molot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 dB/∞ to +3 dB, selectable ±3 lRE ±30" ±15 µs ±200 ns ±10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 15% or less ±0 or ness 2% or less 2% or less 2% or less 2% or less 20 ns or less 1% or less 48 kHz (Syncronized with video) 20 bit/sample Below measurable level 20 dB (or 18 dB selectable) st, T2=15 µs (on/off selectable) st, T2=15 µs (on/off selectable) st, T2=15 µs (on/off selectable) 12 to 20 kHz +0.5 dB/-1.0 dB (d B at 1 kH door than 95 dB (at 1 kHz, emphasis ON), reference an -80 dB (at 1 kHz, between an two chan 100 Hz to 12 kHz ± 3d More than 45 dB (at 3% distortion level) More than 45 dB (at 3% distortion level)	+0.5 dB/-2.0 dB +0.5 dB/-2.0 dB mode) [z]		
gital video performance alog component output rformance alog composite output rformance gital audio performance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync ph. Sampling freque Differential gain Differential gain Differential pha: Y/C delay K Factor (2T Pul Output SCH ph. Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF : A/D quantizatio D/A quantizatio D/A quantizatio D/A quantizatio D/A quantizatio Crosstalk Sampling freque S/N ratio Distortion	rel uue asse e e e e e e e e e e e e e e e e e	Y: 0 to 5.75 MHz Y: 0 to 5.75 MHz T1=50 µ 20 H 1 Less that	D-sub 15-pin "Memory Stick" TM slot, PCMCIA slot ±3 dB/\infty to +3 dB, selectable ±3 dB/\infty to +3 dB, selectable ±3 dB/\infty to +3 dB, selectable ±3 iRE ±30" ±15 \(\mu \) ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 50 dB or 18s 40.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz - 53 dB or more 1% or less 2% or less 2% or less 20 ns or less 2% or less 20 ns or less 48 kHz (Syncronized with video) 20 bit/sample Below measurable level 20 dB (or 18 dB selectable) st, 72=15 \(\mu \) con/off selectable in recording r 20 bit/sample 30 bit/sample 20 bit/sample 20 bit/sample 20 bit/sample 30 bit/sample 20 bit/sample 30 bit/sample 20 bit/sample 30 bit/sample	+0.5 dB/-2.0 dB +0.5 dB/-2.0 dB mode) [z]		
gital video performance nalog component output reformance nalog composite output reformance gital audio performance	Remote2 Paralle Video control Control panel Others Video level Chroma level Set up/black lev Chroma phase/f System sync ph. System SC phas Y/C delay Sampling freque Quantization Compression Channel coding Error correction Bandwidth S/N ratio K Factor (2T Pul Bandwidth S/N ratio Differential gain Differential gain Differential phas Y/C delay K Factor (2T Pul Output SCH ph. Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF : A/D quantizatio Frequency respe Dynamic range Distortion Crosstalk Sampling freque S/N ratio	rel uue asse e e e e e e e e e e e e e e e e e	Y: 0 to 5.75 MHz Y: 0 to 5.75 MHz T1=50 µ 20 H 1 Less that	D-sub 15-pin "Memory Stick" 15 slot, PCMCIA slot ±3 dB/∞ to +3 dB, selectable ±3 iRE ±30" ±15 µs ±200 ns ±10 Y: 74.25 MHz, R-Y/B-Y: 37.125 MHz 10 bit/sample (compression: 8 bit/sample) Coefficient recording system S-I-NRZI PR-IV Reed-Solomon code +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 56 dB or more 1% or less +0.5 dB/-2.0 dB, R-Y/B-Y: 0 to 2.75 MHz 53 dB or more 2% or less 2% or less 2% or less 2% or less 20 ns or less 19 or less 48 kHz (Syncronized with video) 20 bit/sample Below measurable level 20 dB (or 18 dB selectable in recording to the selectable in the selectable i	+0.5 dB/-2.0 dB +0.5 dB/-2.0 dB mode) [z]		

HDW-2000 Series Specifications

			HDW-D2000	HDW-S2000/S2000P			
General	Power requirem			V, 50/60 Hz			
	Power consump) W			
	Operating temp Storage tempera			(41 to 104 °F) (-4 to +140 °F)			
	Humidity	itale		(-4 to +140 F) 90%			
	Mass			lb 11 oz)			
	Dimensions (W	x H x D)		7/8 x 6 7/8 x 21 1/2 inches)			
	Tape speed	HDCAM	96.7 mm/s (59.94i, 29.97PsF), 80.6 mm/s	(50i, 25PsF), 77.4 mm/s (24PsF, 23.98PsF)			
		Digital BETACAM	96.7 mm/s				
		MPEG IMX BETACAM SX	64.5 mm/s (525/59.94), 53.8 mm (625/50)	59.6 mm/s			
		BETACAM/BETACAM SP	_	59.6 mm/s 118.6 mm/s (525/59.94), 101.5 mm/s (625/50			
	HDCAM Record		124 minutes (59.94i, 29.97Ps	F, with BCT-124HDL cassette)			
				vith BCT-124HDL cassette)			
				F, with BCT-124HDL cassette)			
			40 minutes (59.94i, 29.97PsF, with BCT-40HD cassette)				
				with BCT-40HD cassette)			
	Fast forward/rev	vind time		F, with BCT-40HD cassette) n BCT-124HDL cassette)			
	Search speed	Shuttle mode	Approx. 5 minutes (with	T DCT-12-11DE Cassette)			
	range	HDCAM	Still to ±50 times normal speed playback (59.9	94i, 29.97PsF), Still to ±58 times normal speed			
				normal speed playback (24PsF, 23.98PsF)			
		Digital BETACAM	Still to ±50 times normal speed playback	<u> </u>			
		MPEG IMX BETACAM SX	Still to ±78 times normal speed playback	Still to ±78 times normal speed playback			
		BETACAM/BETACAM SP		Still to ±76 times normal speed playback (525/59.9			
		DETACTIVE DETACTION ST	-	Still to ±42 times normal speed playback (625/50			
		Variable mode		,			
		HDCAM		mal speed playback			
		Digital BETACAM	-1 to +3 times normal speed playback				
		MPEG IMX BETACAM SX	-1 to +3 times normal speed playback	1 to ±2 times normal second electric			
		BETACAM SX BETACAM/BETACAM SP		-1 to +2 times normal speed playback -1 to +3 times normal speed playback			
		Jog mode	Still to ±1 times no	mal speed playback			
	Servo lock time		0.6 s or less (59.94i, 29.97PsF, from standby on), 0.7 s	or less (50i, 25PsF, 24PsF, 23.98PsF, from standby of			
	Load/unload tin	ne	6 s or less (both	L and S cassettes)			
Input/output	HD-SDI input	LINDRAGO		Serial Digital (1.485 Gb/s)			
		onal HKDW-102 installed)	BNC x 1 (SMPTE BNC x 2 (with a loop-through), Tri-level sync, 0.6 Vp-	305M), 270 Mb/s			
	Reference video	приг		o, 75 Ω, sync negative or Black Burst or Composite, i sync negative			
	Digital audio inpi	ut (CH 1/2, CH 3/4)		AES/EBU			
	Analog audio ir			e, female, x 5			
	(CH 1/2/3/4/Cu	ie)	Low off: -60 dBu, high	impedance, balanced			
				impedance, balanced			
				Ω termination, balanced			
	Time code inpu HD-SDI output	I		.5 to 18 Vp-p,10 kΩ, balanced) haracter out), Serial Digital (1.485 Gb/s)			
	SDTI output (with optional HKDW-102 installed) SDI output Analog composite output			305M), 270 Mb/s			
				character out), Serial Digital (270 Mb/s)			
				ne character out, one WFM out)			
				e, R-Y/B-Y: 0.7 Vp-p, 75 Ω			
	Analog compon			/p-p, 75 Ω, sync negative			
	Digital audio out	put	BNC x 4, AES/EBU (CH 1/2, CH 3/4, CH 5/6, CH 7/8)	BNC x 2, AES/EBU (CH 1/2, CH 3/4)			
	Analog audio o	utput (CH 1/2/3/4)		00 Ω load), low impedance, balanced			
	Time code outp			/p-p, low impedance, balanced)			
	Monitor output		XLR-3-pin type, male, x 2 (+4 dBm at	600 Ω load, low impedance, balanced)			
	Headphones			12 dBu at 8 Ω load, unbalanced)			
	Remote1 In Remote1 Out RS-232C			-pin remote interface			
				-pin remote interface			
	Remote2 Paralle	el I/O		9-pin 50-pin			
	Video control			D-sub 15-pin			
	Control panel		D-sub	15-pin			
	Others			Stick"TM slot			
Processor adjustment range	Video level		±3 dB/∞ to +3	dB, selectable			
	Chroma level Set up/black lev	ام		dB, selectable			
	Chroma phase/l		±3				
	System sync ph			5 µs			
	System SC phas			0 ns			
D'. '(-1 - '1 '	Y/C delay		_	±100 ns			
Digital video performance	Sampling freque	ency		//B-Y: 37.125 MHz			
	Quantization Compression			ression: 8 bit/sample) cording system			
	Channel coding			ZI PR-IV			
	Error correction			mon code			
Analog component output	Bandwidth			Y/B-Y: 0 to 2.75 MHz +0.5 dB/-2.0 dB			
performance	S/N ratio	l)		or more			
Analog composite output	K Factor (2T Pu Bandwidth	ise)		or less Y/B-Y: 0 to 2.75 MHz +0.5 dB/-2.0 dB			
performance	S/N ratio			or more			
	Differential gair			or less			
	Differential pha			or less			
	Y/C delay		20 ns	or less			
	K Factor (2T Pu			or less			
	Output SCH phase			70A/CCIR R.624-3			
Digital audio performance				ized with video) sample			
Digital audio performance	Sampling freque	ency					
Digital audio performance	Sampling freque Quantization	ency		surable level			
Digital audio performance	Sampling freque Quantization Wow & flutter Headrooms		Below mea: 20 dB (or 18	dB selectable)			
	Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF	selectable in REC mode)	Below mea: 20 dB (or 18 T1=50 \(\mu\)s, T2=15 \(\mu\)s (on/off:	dB selectable) selectable in recording mode)			
Analog audio output	Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF A/D quantization	selectable in REC mode)	Below mea: 20 dB (or 18 T1=50 μs, T2=15 μs (onoff: 20 bit/	dB selectable) selectable in recording mode) sample			
Analog audio output	Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF A/D quantization D/A quantization	selectable in REC mode)	Below mea: 20 dB (or 18 T1=50 μs, T2=15 μs (on/off: 20 bit/ 20 bit/	dB selectable) selectable in recording mode) sample sample			
Analog audio output	Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF A/D quantizatio D/A quantizatio Frequency respo	selectable in REC mode) on on onse	Below mea: 20 dB (or 18 T1=50 μs, T2=15 μs (on/off: 20 bit/ 20 bit/ 20 Hz to 20 kHz +0.5 d	dB selectable) selectable in recording mode) sample sample 3/-1.0 dB (0 dB at 1 kHz)			
Analog audio output	Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF A/D quantizatio D/A quantizatio Frequency respo	selectable in REC mode) on on onse	Below mea: 20 dB (or 18 T1=50 µs, T2=15 µs (onoff: 20 bit/ 20 bit/ 20 Hz to 20 kHz +0.5 d More than 95 dB (at	dB selectable) selectable in recording mode) sample sample 8/-1.0 dB (0 dB at 1 kHz) 1 kHz, emphasis ON)			
Analog audio output performance	Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF A/D quantizatio D/A quantizatio Frequency respo	selectable in REC mode) on on onse	Below mea: 20 dB (or 18: T1=50 µs, T2=15 µs (onof6: 20 bit/ 20 bit/ 20 Hz to 20 kHz +0.5 d More than 95 dB (at Less than 0.05% (at 1 kHz,	dB selectable) selectable in recording mode) sample sample 3/-1.0 dB (0 dB at 1 kHz)			
Analog audio output performance	Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF A/D quantizatio Di/A quantizatio Frequency respe Dynamic range Distortion Crosstalk Sampling freque	selectable in REC mode) on on onse	Below mea: 20 dB (or 18 T1=50 µs, T2=15 µs (on/off: 20 bit/ 20 bit/ 20 Hz to 20 kHz +0.5 More than 95 dB (at Less than -80 dB (at 1 kHz, 100 Hz to 1	dB selectable) electable in recording mode) sample sample 3/-1.0 dB (0 dB at 1 kHz) 1 kHz, emphasis ON) emphasis ON, reference level) between any two channels) 2 kHz ± 3 dB			
Analog audio output performance	Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF A/D quantizatio D/A quantizatio Frequency respo Dynamic range Distortion Crosstalk Sampling freque S/N ratio	selectable in REC mode) on on onse	Below mea: 20 dB (or 18 T1=50 µs, T2=15 µs (on/off: 20 bit/ 20 bit/ 20 Hz to 20 kHz +0.5 d More than 95 dB (at Less than 0.05% (at 1 kHz, 100 Hz to 1 More than 45 dB (at More than 45 dB (at)	dB selectable) selectable in recording mode) sample sample 83-1.0 dB (0 dB at 1 kHz) 1 kHz, emphasis ON) emphasis ON, reference level) between any two channels) 2 kHz ±3 dB 3% distortion level)			
Analog audio output performance	Sampling freque Quantization Wow & flutter Headrooms Emphasis (DNOFF A/D quantizatio D/A quantizatio D/A quantizatio Frequency resp Dynamic range Distortion Crosstalk Sampling freque S/N ratio Distortion	selectable in REC mode) on on onse	Below meat 20 dB (or 18 T1=50 μs, T2=15 μs (on/off: 20 bit/ 20 bit/ 20 Hz to 20 kHz +0.5 d More than 95 dB (at 1 kHz, Less than -80 dB (at 1 kHz, 100 Hz to 1 More than 45 dB (at 1 kHz, Less than 280 kHz +1 kHz, Less than 280	dB selectable) selectable in recording mode) sample sample SI-1.0 dB (0 dB at 1 kHz) 1 kHz, emphasis ON) emphasis ON, reference level) between any two channels) 2 kHz ±3 dB 3% distortion level) 1 kHz, reference level)			
Digital audio performance Analog audio output performance Cue track	Sampling freque Quantization Wow & flutter Headrooms Emphasis (ON/OFF A/D quantizatio D/A quantizatio Frequency respo Dynamic range Distortion Crosstalk Sampling freque S/N ratio	selectable in REC mode) on on onse	Below mea: 20 dB (or 18 T1=50 μs, T2=15 μs (on/off) 20 bit/ 20 bit/ 20 Hz to 20 kHz +0.5 dS More than 95 dB (at Less than -80 dB (at 1 kHz, 100 Hz to 1 More than 45 dB (at Less than -80 (T.H.D. a Less than 2% (T.H.D. a Less than 2% (T.H.D. a Less than 2% (T.H.D. a	dB selectable) selectable in recording mode) sample sample 83-1.0 dB (0 dB at 1 kHz) 1 kHz, emphasis ON) emphasis ON, reference level) between any two channels) 2 kHz ±3 dB 3% distortion level)			

HDW-2000 Series Specifications

Digital BETACAM playback (HDW-M2000/M2000P, HDW-M2100/M2100P, HDW-D2000)

Digital BLIACAM play	Dack (HDVV-IVI.	2000/14120001 , 1	1DVV-W12100/W121001 , 11DVV-D2000)	
Video performance	Bandwidth	Y	0 to 5.75 MHz +0.5 dB/-0.5 dB	
		R-Y/B-Y	0 to 2.75 MHz +0.5 dB/-0.5 dB	
			62 dB or more 1% or more	
Digital audio (CH 1 to CH 4)	Frequency respon	ise (0 dB at 1 kHz)	20 Hz to 20 kHz +0.5 dB/-1.0 dB	
			95 dB (at 1 kHz, emphasis ON)	
			0.05% rms (emphasis ON)	
	Wow & flutter		Below measurable level	
Analog audio (cue track)	Frequency response (0 dB at 1 kHz)		100 Hz to 12 kHz +3 dB/-3 dB	
	S/N ratio (at 3%	distortion level)	45 dB (at 1 kHz)	
	Distortion (T.H.D. at	1 kHz, reference level)	2% or less	
	Wow & flutter		HDW-M2000/M2100/D2000: Less than 0.5% rms	
			HDW-M2000P/M2100P/D2000:	
			Less than 0.2% (DIN 45508 weighted)	

MPEG IMX playback(HDW-M2000/M2000P, HDW-M2100/M2100P, HDW-D2000)

	,,,,,,,					
Vi	deo performance	Bandwidth Y		0 to 5.75 MHz +0.5 dB/-2.0 dB		
			R-Y/B-Y	0 to 2.75 MHz +0.5 dB/-2.0 dB		
		S/N ratio 5		56 dB or more		
		K factor (2T pulse)		1% or less		
Αι	udio perfomance	Frequency response		20 Hz to 20 kHz +0.5 dB/-1.0 dB (0 dB at 1 kHz)		
		Dynamic range		90 dB or more (at 1 kHz, emphasis ON, 16 bits/48 kHz)		
		Distortion		0.05% or less (at 1 kHz, emphasis ON, reference level (+4 dBm))		

BETACAM SX playback (HDW-M2000/M2000P, HDW-M2100/M2100P, HDW-S2000/S2000P)

Video performance	Bandwidth Y		HDW-M2000/M2100/S2000: 0 to 4.5 MHz +0.5 dB/-3.0 dB	
			HDW-M2000P/M2100P/S2000P: 0 to 5.5 MHz +0.5 dB/-3.0 dB	
		R-Y/B-Y	0 to 2.0 MHz +0.5 dB/-3.0 dB	
	S/N ratio		56 dB or more	
	K factor (2T pulse)		1% or less	
Audio perfomance	Frequency response		20 Hz to 20 kHz +0.5 dB/-1.0 dB (0 dB at 1 kHz)	
	Dynamic range		90 dB or more (at 1 kHz, emphasis ON)	
	Distortion		0.05% or less (at 1 kHz, emphasis ON, reference level (+4 dBm))	

Analog BETACAM playback (HDW-M2000, HDW-M2100, HDW-S2000)

			Metal tape	Oxide tape
Video performance	Bandwidth	Y	30 Hz to 4.5 MHz +0.5 dB/-4.0 dB	30 Hz to 4.1 MHz +0.5 dB/-6.0 dB
		R-Y/B-Y		30 Hz to 1.5 MHz +0.5 dB/-3.0 dB
	S/N ratio	Υ	51 dB or more	48 dB or more
		R-Y/B-Y	48 dB or more	45 dB or more
	K-Factor (2T Pulse)		2% or less	3% or less
	LF non-linearity	Υ	3% c	r less
		R-Y/B-Y	4% or less	
	Y/C delay		20 ns or less	
Audio performance	LNG		50 Hz to15 kHz +1.5 dB/-3.0 dB	50 Hz to15 kHz +1.5 dB/-3.0 dB
		S/N ratio	72 dB or more	50 dB or more (Dolby NR off)
		T.H.D.	1% or less	2% or less
		Wow & Flutter	0.1% rms or less	
	AFM*	Frequency response	20 Hz to 20 kHz	+0.5 dB/-2.0 dB
		S/N ratio	85 dB (or more
		T.H.D.	0.5%	or less

^{*} The HDW-S2000 does not support AFM playback.

Analog RETACAM playback (HDW-M2000P, HDW-M2100P, HDW-S2000P)

			Metal tape	Oxide tape
Video performance	Bandwidth	Y	25 Hz to 5.5 MHz +0.5 dB/-4.0 dB	25 Hz to 4.0 MHz +0.5 dB/-6.0 dB
		R-Y/B-Y	25 Hz to 2.0 MHz +0.5 dB/-3.0 dB	25 Hz to 1.5 MHz +0.5 dB/-3.0 dE
	S/N ratio	Y	48 dB or more	46 dB or more
		R-Y/B-Y	48 dB or more	45 dB or more
	K-Factor (2T Pulse)	•	2% or less	3% or less
	LF non-linearity	Y	3% or less	
		R-Y/B-Y	4% or less	
	Y/C delay	•	20 ns or less	
Audio performance	LNG	Frequency response	50 Hz to 15 kHz +1.5 dB/-3.0 dB	50 Hz to15 kHz ±3.0 dB
		S/N ratio	68 dB or more	62 dB or more (Dolby NR off)
		T.H.D.	1% or less	2% or less
		Wow & Flutter	0.1% rms or less	
	AFM*	Frequency response	20 Hz to 20 kHz +0.5 dB/-2.0 dB	
		S/N ratio	More than 72 dB (C	CIR 468-3 weighted)
		T.H.D.	Less tha	an 0.5%

^{*} The HDW-S2000P does not support AFM playback.

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